

What is claimed is:

1. An effective number of gray levels detection apparatus is to determine the effective number of gray levels of a display while showing motion images, which detection apparatus  
5 comprising:

an image generation means for generating a still image and its duplication but with adjustable motion vectors, and then for providing an interested display to show the above-mentioned two  
10 images at the same time;

wherein the still image can present the gray level capability of the display while showing still images;

an examination means for determine the effective number of gray levels of the display while showing motion images from the  
15 above-mentioned motion image.

2. The apparatus as claim 1, wherein said gray levels of the still image are adjustable.
3. The apparatus as claim 1, wherein said the motion image is  
20 the duplication of the said still image but with adjustable moving speed and direction.
4. The apparatus as claim 3, wherein said the moving speed and direction of the moving image can be either automatically adjusted or by manually operated.
- 25 5. The apparatus as claim 1, wherein said the examined means can be either real human eyes or a human eyes simulator which simulates the detection behaviors of real human eyes.

6. A effective number of gray levels detection apparatus is to determine the effective number of gray levels of a display while showing motion images, which detection apparatus  
5 comprising:  
a visual simulator for simulating visual detection and recognition; and  
an image generation means for generating a still image and its duplication but with adjustable motion vectors, and then for  
10 providing an interested display to show the above-mentioned two images at the same time;  
wherein the still image can present the gray level capability of the display while showing still images;  
an examination means for determine the gray level capability  
15 of the display while showing motion images from the above-mentioned motion image which is a duplication of the still image.
7. The apparatus as claim 6, wherein said the visual simulator can be either a specified apparatus or a computer system with human eyes simulation programs.
- 20 8. The apparatus as claim 6, wherein said gray levels of the still image are adjustable.
9. The apparatus as claim 6, wherein said the motion image is the duplication of the said still image but with adjustable moving speed and direction.
- 25 10. The apparatus as claim 9, wherein said the moving speed and direction of the moving image can be either automatically adjusted or by manually operated.

11. An effective number of gray levels detection method is to determine the effective number of gray levels of a display while showing motion images, which detection method comprising:
- 5     Generating a still image and its duplication but with adjustable moving speed and direction, the duplication is referred as a motion image hereinafter, by an image generating means first, and then showing the images on the screen;  
       adjusting the moving speed and direction of the moving image;
- 10    and  
       determining the discrimination of adjacent gray levels of the moving image.
12. The method as claim 11, wherein said the number of gray levels of a display while showing moving images is not lost  
15    if edge of adjacent gray levels of the moving image can be discriminated.
13. The method as claim 11, wherein said the number of gray levels of a display while showing moving images is lost if  
20    edge of adjacent gray levels of the moving image can not be discriminated.
14. The method as claim 11, wherein said the gray levels, moving speed, and moving direction are adjustable for detecting the gray level capability of the display while  
25    showing different moving pictures.
15. The method as claim 11, wherein said gray levels, speed and direction of the still image and the moving image can be

either automatically adjusted or by manually operated.